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(54) **Methods and apparatus for encoding information in a signal by spectral notch modulation**

(57) A spectral notch modulation technique for encoding information in a signal involves transforming the signal into the frequency domain via a fast Fourier transform (FFT) of length N (26), such that the signal is represented by N frequency bins, selectively nulling M of the N frequency bins (28), where nulled combinations of M frequency bins respectively correspond to encoded information bits, transforming the selectively nulled signal

to the time domain via an inverse FFT (30), and transmitting the selectively nulled signal. At the receiving end, the signal is demodulated to recover the encoded information by transforming the signal into the frequency domain via a fast Fourier transform (FFT) of length N (50), identifying the set of M nulled frequency bins among the N frequency bins (52), and converting the set of M nulled frequency bins to corresponding information bits.

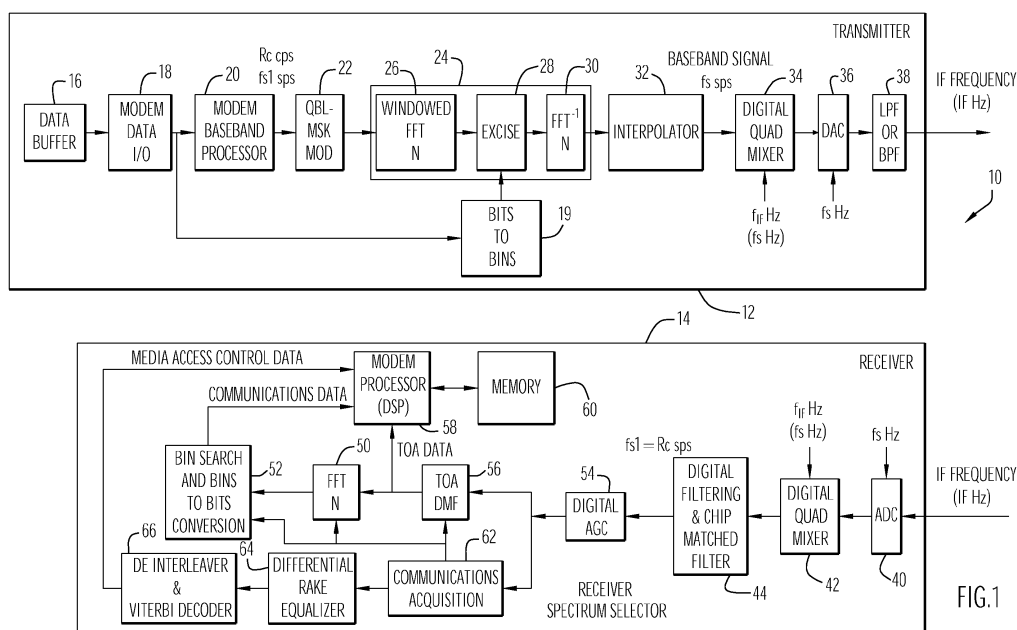


FIG.1



## EUROPEAN SEARCH REPORT

Application Number  
EP 06 11 7787

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 December 2011	Examiner Ratajski, André
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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EPO FORM 1503 (3.82 (P04C01))

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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08-12-2011

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